

Fast Preview

Note: This is not exactly what the published abstract will look like

<p>Exploration Approaches and Constraints for Subglacial Liquid Water Bodies on Earth and on Planetary Sites</p> <p>Frank D Carsey¹ (1-818-354-8163; fcarsey@jpl.nasa.gov) Hermann Engelhardt² (1-626-395-720; hermann@skua.gps.caltech.edu) Lloyd C French¹ (1-818-393-8023; Lloyd.C.French@jpl.nasa.gov) Roger G Kern¹ (1-818-354-2233; Roger.G.Kern@jpl.nasa.gov) Arthur Lonnie Lane¹ (1-818-354-2725; Arthur.L.Lane@jpl.nasa.gov) Linda S Powers³ (1-435-797-3386; lsp@biocat.ncdmf.usu.edu)</p> <p>¹Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Dr, Pasadena, CA 91109, United States ²Geophysics, California Institute of Technology, 1200 E. California Blvd, Pasadena, CA 91125, United States ³National Center for the Design of Molecular Function, Utah state University, 4155 Old Main Hill, Logan, UT 84322, United States</p> <p>Recently, subglacial lakes in Antarctica and putative oceans beneath icy crusts of Europa and Callisto have been described in the literature, and the unique properties of these sites have captured the attention of the scientific community and the public. Much attention has been directed to the biological potential and probable microbial inhabitants of these waters. In this paper we will review what is known of these subglacial habitats and examine in detail techniques for their in-situ exploration to develop information on the physical, geochemical, microbial, and geophysical aspects. Conduct of this exploration without contamination of the water is viewed as essential, and, although specific sterility and cleanliness requirements for these explorations have not been specified, achieving the probable decontamination level is clearly a crucial technology development issue. Other design and development issues have been addressed and will be described as well; these include access to the subglacial environment, scientific and operational instrumentation, and communication of data and commands between the surface and the instrumented probe. A crucial aspect of subglacial life is the role of grain-boundary brine and inclusions, both gas and mineralogic, to serve as energy for chemolithoautotrophic microbes. A consequence of our level of knowledge of the subglacial coupled with likely physical distributions is that optical examinations, especially Raman spectra and UV fluorescence spectra, are extremely useful and yet remarkably simple, exploration tools. Specific examples will be chosen from a subglacial probe being used in the Antarctic at the time of the AGU Fall Meeting.</p>	<p>Meeting: Fall Meeting 2000</p> <p>Reference Number:40</p> <p>Membership Number: Frank D Carsey AGU - 01308682</p> <p>Contact Information: Frank D Carsey Jet Propulsion Laboratory, California Institute of Technology 4800 Oak Grove Dr Pasadena, CA 91109, United States ph : 1-818-354-8163 fax : 1-818-393-6720 e-mail : fcarsey@jpl.nasa.gov</p> <p>Student rate: Not Applicable</p> <p>Willing to chair a session: Frank D Carsey</p> <p>Meeting Section: B - Biogeosciences</p> <p>Special Session: B18 - Biogeosciences: Expanding Horizons in Understanding Earth and Planetary Systems</p> <p>Index Terms: 1060,1694,1827,4847,6218</p> <p>Theme:</p> <p>Material presented: 0%</p> <p>Contributed</p> <p>Poster presentation requested: 2=PC-MAC</p> <p>Scheduling request: Poster Acceptable</p>
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